

**ELECTRICAL RESISTANCE SENSOR AND APPARATUS
FOR MONITORING CORROSION**

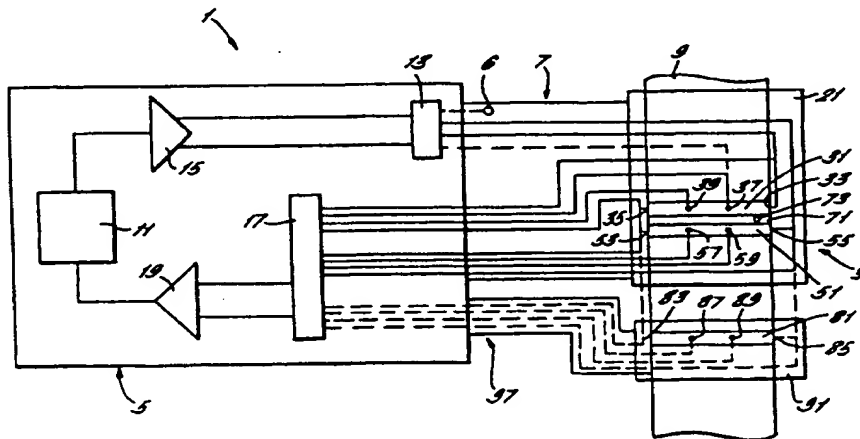
ABSTRACT OF THE DISCLOSURE

An apparatus (1) is disclosed for
5 monitoring the effect on a material of exposure to a
fluid, and thereby monitoring the effect on a section
of pipe (9) for carrying the fluid. The apparatus
comprises a sensor element (51) exposed to the fluid
and formed as a ring of the material coaxially
10 mounted within, but electrically insulated from, the
section of pipe (9). Changes in the electrical
resistance of the sensor element (51) are monitored.
Preferably, the apparatus also comprises a reference
element (31) electrically insulated from the pipe
15 (9), electrically connected in series to the sensor
element (51) and protected from exposure to the
fluid. The elements may both be made from the same
material as the pipe (9) and, as they are contained
within it, experience the same temperature and
20 pressure variations as the pipe (9). In this manner a
change in the resistance of the sensor element (51)
caused by corrosion/erosion by the fluid accurately
indicates the degree of corrosion/erosion of the pipe
(9) carrying the fluid.

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(21) International Application Number: PCT/GB00/01348 (22) International Filing Date: 10 April 2000 (10.04.00) (30) Priority Data: 9908950.0 19 April 1999 (19.04.99) GB (71) Applicant (for all designated States except US): CORMON LIMITED [GB/GB]; Cormon House, Riverbank Business Centre, Old Shoreham Road, Shoreham-by-Sea, West Sussex BN43 5FL (GB). (72) Inventor; and (75) Inventor/Applicant (for US only): HEMBLADE, Barry [GB/GB]; 49 Lawrence Road, Hove, West Sussex BN3 5QE (GB). (74) Agent: BOULT WADE TENNANT; Verulam Gardens, 70 Gray's Inn Road, London WC1X 8BT (GB).		(81) Designated States: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG). Published With international search report.	

(54) Title: ELECTRICAL RESISTANCE SENSOR AND APPARATUS FOR MONITORING CORROSION



(57) Abstract

An apparatus (1) is disclosed for monitoring the effect on a material of exposure to a fluid, and thereby monitoring the effect on a section of pipe (9) for carrying the fluid. The apparatus comprises a sensor element (51) exposed to the fluid and formed as a ring of the material coaxially mounted within, but electrically insulated from, the section of pipe (9). Changes in the electrical resistance of the sensor element (51) are monitored. Preferably, the apparatus also comprises a reference element (31) electrically insulated from the pipe (9), electrically connected in series to the sensor element (51) and protected from exposure to the fluid. The elements may both be made from the same material as the pipe (9) and, as they are contained within it, experience the same temperature and pressure variations as the pipe (9). In this manner a change in the resistance of the sensor element (51) caused by corrosion/erosion by the fluid accurately indicates the degree of corrosion/erosion of the pipe (9) carrying the fluid.